MONETARY AND SOCIAL IMPACT MEASURES OF VISITOR EXPERIENCE AND THE EFFECTS OF A PIPING PLOVER RECOVERY PROGRAM ON VISITOR EXPERIENCE

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This study examined visitor perceptions and attitudes towards their experience at a national wildlife refuge which limits access to its barrier beach during the nesting season of the threatened piping plover. It determined attitudes towards the closure, as well as what factors influenced these attitudes. It also examined how willingness to pay for refuge protection related to overall experience rating and attitudes towards wildlife protection and crowding. The data were gathered in 1993 in a self-administered user survey. The results indicate visitor support for the refuge and the beach closure, with those visitors interested in beach-related activities more likely to indicate less positive experiences and less support for the beach closure. A positive relationship was established between willingness to pay for refuge protection and a positive experience, as well as between willingness to pay and support for wildlife protection efforts and limiting the number of visitors.

Introduction

Parker River National Wildlife Refuge was designed to protect a species listed as threatened under the federal Endangered Species Act. The refuge beach was closed to all human recreational use for the past three years during the nesting season of the piping plover, lasting from April through July, to protect the shorebirds while they nested and reared their young. Since the refuge beach is a popular recreation destination during the spring and summer months, the closure has affected a number of refuge visitors. To analyze visitor satisfaction with the refuge experience, and the effect of the beach closure on visitor experience, this study analyzed visitor attitudes regarding their experience at the refuge, the value they place on the refuge as a recreational and natural resource, and how plover protection efforts affect these attitudes and values. It also examined how monetary measures of value related to perceptions of crowding and wildlife protection efforts, and whether experience ratings were related to willingness to pay into a refuge protection fund.

Although the same measures of visitor experience were not used in previous studies, studies conducted at beaches have shown that previous experience with a resource, knowledge of preservation issues , the visual landscape, and convenience all influence willingness to pay into coastal beach protection funds (Bell and Leeworthy, 1986; Lindsay et al. 1992). Perceptions of crowding and parking availability did not influence willingness to pay for resident Florida beach users, but tourists were willing to pay more for beach protection if they perceived increased crowding (Bell and Leeworthy, 1986). McConnell (1976) found that there was a relationship between number of people per acre of beach and willingness to pay for beach use, controlling for temperature, frequency of use, and income. Cicchetti and Smith (1976) also found a relationship between number of campsite and trail contacts and reduced willingness to pay levels.

Background

Parker River National Wildlife Refuge (Parker River, or The Refuge) is located on the southern two-thirds of Plum Island, located off Newburyport, Massachusetts, a coastal community approximately 60 miles north of Boston. The 4,462 acre refuge contains over six miles of undisturbed barrier beach and dunes, constructed dikes and lagoons for waterfowl resting areas, nature trails, observation towers, boardwalks, and a partially paved access road which runs the length of the refuge.

Currently, approximately 250,000 parties visit the refuge annually. The refuge serves as a popular recreation destination for beachgoers, bird watchers, wildlife and nature enthusiasts, environmental education classes, photographers, runners, bicyclists, and walkers. Clamming, waterfowl and deer hunting, berry picking and surf fishing are also active recreation activities which are permitted at various times of the year. This mix of activities has led to a wide variety of restrictions and active management strategies designed to mitigate the potentially adverse affects of human recreation on wildlife and wildlife habitat, and to minimize conflicts between different uses.

Methods

A visitor survey was conducted at the refuge from June through November of 1993. Visitors were given self-administered surveys as they entered the refuge. After pretesting, the survey was conducted between June and November of 1993, including summer months when the beach was open and closed, as well as autumn months. Results of the survey were analyzed using descriptive statistics, cross tabulation and chi-squared analysis, and analysis of variance.

Results

Visitor Experience at the Refuge

Ninety seven percent of respondents indicated that they had an excellent or good experience at the refuge (Table 1) . Overall , they indicated strong support for the beach closure (Table 2), and did not feel that the closure either enhanced or detracted from their experiences (Table 3). Those visitors who came to the refuge to observe wildlife in general or birds in particular were more likely to indicate that the beach closure enhanced their experience (Figure 2), and were also more likely to support the closure (Figure 1). Those visitors who came to fish, walk, or use the beach indicated that the closure detracted from their experience, and were also less likely to support the closure.

Table 1. Visitor rating of overall experience at refuge.

Experience rating	Frequency	Percentage
Poor	4	1%
Fair	22	3%
Good	283	32%
Excellent	577	65%
TOTAL	886	100%

Table 2. Visitor support for beach closure.

	Frequency	Percentage
1= strongly support	554	62%
2	159	18%
3	109	12%
4	27	3%
5= strongly opposed	38	4%
TOTAL	887	100%

Table 3. Effect of beach closure on visitor experience.

	Frequency	Percentage
1= enhanced experience	93	11%
2	57	7%
3	475	57%
4	114	14%
5= detracted from experience	95	11%
TOTAL	834	100%

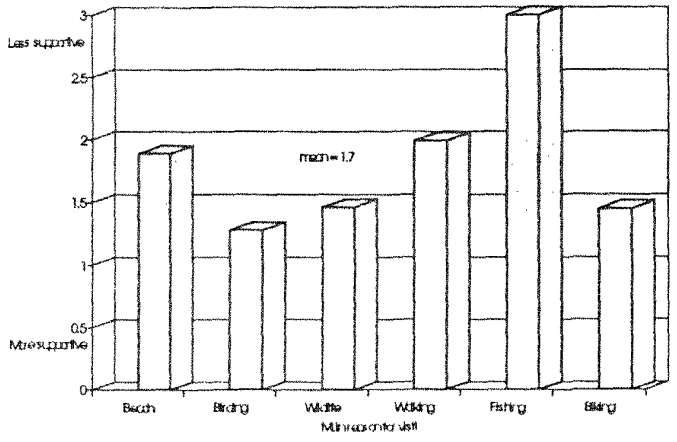

Figure 1. Support for beach closure by reason for visit.

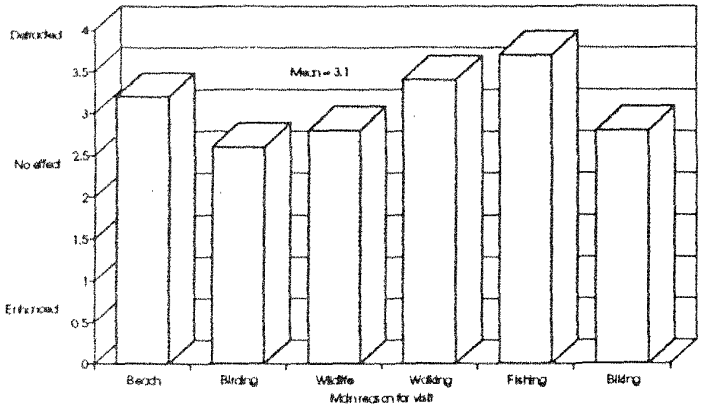

Figure 2. Effect of beach closure by reason for visit.

Specific questions were asked related to issues of crowding and perceptions of wildlife protection issues at the refuge. Visitors indicated slight disagreement with the statement that reducing the number of visitors at the refuge would be desirable, (a mean score of 2.49, with 1 = strongly disagree and 5 = strongly agree) indicating that crowding is not an important issue with the majority of visitors. The majority of visitors felt that wildlife protection measures are adequate at the refuge, or should be emphasized more, with 42 percent neutral and 35 percent agreeing or strongly agreeing with the statement "More measures should be taken to protect wildlife and wildlife habitat at the refuge." Respondents also indicated that they did not feel measures to protect wildlife were overemphasized at the expense of recreation, with 72 percent indicating disagreement or strong disagreement with the statement "Wildlife protection has been overemphasized at the expense of recreation at the refuge." These responses indicated support for the mandate under which the refuge is managed, and are consistent with the support visitors indicated for current refuge management efforts. Given the fact that the most common reasons cited for visiting the refuge

involve recreation and wildlife observation, the support for existing protection efforts and the lack of perceived conflict between protection efforts and recreation indicate that visitors' experiences are not adversely affected by contact with other visitors, or by other uses of the refuge.

Monetary and Social Impact Measures of Visitor Experience
How visitors rated their experiences at the refuge was also assessed through determining the amount they were willing to pay into a fund dedicated to refuge protection. Of the 716 respondents answering the question, the average response was an annual contribution of $24.44 per party.

To determine whether there was a relationship between monetary measures of the visitors' experiences and the social impact measures, one-way ANOVA tests were conducted. There is a significant and positive relationship between willingness to pay for refuge protection and positive experiences at the refuge: those who rate their experience highly are more likely to indicate greater amounts they are willing to pay for refuge protection efforts (Table 4). There is a positive and significant relationship between willingness to pay for refuge protection and support for existing or increased levels of wildlife protection measures at the refuge; those who value the wildlife protection measures at the refuge are willing to pay greater amounts towards further protection of the refuge than are those who do not place as much importance on wildlife protection (Table 6). There is also a positive and significant relationship between willingness to pay for refuge protection and support for reducing the number of visitors at the refuge (Table 7). Although more visitors disagree with the statement that the number of visitors should be reduced, those who do agree are willing to pay more for refuge protection.

Effects of the Beach Closure
Those visitors who rated their experience less highly were more likely to be visiting during the beach closure months (table 8). Support for the closure was not, however, influenced by when the visit took place. No statistically significant difference was noted between willingness to pay for refuge protection when the beach was open and when the beach was closed. The beach closure variable does not add explanatory power to the relationship between willingness to pay for refuge protection and visitor satisfaction expressed through experience rating; the relationship is not significantly affected by whether the beach is open or closed. Similarly, the beach closure variable does not change the significant and positive relationships between willingness to pay for refuge protection and beliefs regarding the importance of wildlife protection efforts and the desirability of reduced numbers of visitors.

Table 4. Relationship between rating of overall experience and willingness to pay for refuge protection.

How would you rate your experience at the refuge?	Mean willingness to pay for refuge protection	Frequency
Poor	$10.00	4
Fair	$19.00	15
Good	$22.39	218
Excellent	$25.17	466
TOTAL		703

a/ F statistic = 3.04*
Bartlett's test for equal variances:
$chi^2(3) = 0.7864$ Prob>$chi^2 = 0.853$
* = Significant at the .05 level

Table 5. Relationship between response to "Wildlife protection has been overemphasized at the expense of recreation" and willingness to pay for refuge protection.

	Mean willingness to pay for refuge protection	Frequency
1 = strongly agree	$20.16	32
2	$23.77	53
3	$23.42	98
4	$22.98	155
5 = strongly disagree	$25.26	351
TOTAL		689

a/ F statistic = 1.17*
Bartlett's test for equal variances: $chi^2(4) = 1.9175$
Prob>$chi^2 = 0.751$ * = Significant at the .05 level

Table 6. Relationship between response to "More measures should be taken to protect wildlife" and willingness to pay for refuge protection.

	Mean willingness to pay for refuge protection	Frequency
1 = strongly disagree	$19.08	49
2	$21.18	106
3	$24.27	291
4	$26.49	109
5 = strongly agree	$25.11	130
TOTAL		685

a/ F statistic = 2.80*
Bartlett's test for equal variances: $chi^2(4) = 3.8031$
Prob>$chi^2 = 0.433$ * = Significant at the .05 level

Table 7. Relationship between response to "Reduce number of visitors" and willingness to pay for refuge protection.

	Mean willingness to pay for refuge protection	Frequency
1= strongly disagree	$21.39	140
2	$22.44	210
3	$25.25	249
4	$27.62	60
5= strongly agree	$30.86	29
TOTAL		688

a/ F statistic = 3.94*
Bartlett's test for equal variances: $chi^2(4) = 3.6845$
Prob>$chi^2 = 0.450$ * = Significant at the .01 level

Table 8. Relationship between rating of overall experience and time of year.

	Experience: Poor	Fair	Good	Excellent	TOTAL
Beach closed	3	10	82	153	248
Percent	*75%*	*46%*	*29%*	*27%*	*28%*
Beach open	1	12	201	424	638
Percent	*25%*	*55%*	*71%*	*74%*	*72%*
TOTAL	4	22	283	577	886
Percent	*100%*	*100%*	*100%*	*100%*	*100%*

a/ Pearson $chi^2(3) = 8.4727$
Pr= 0.037*
* = significant at the .05 level

Summary

Results of the visitor survey revealed visitors had an overall positive perception of their experience, were supportive of the beach closure, and the majority felt that it neither enhanced nor detracted from their experience. Willingness to pay into a fund dedicated to refuge protection was positively related to positive perceptions of experience. When the visitors were attending the refuge (during the beach closure or when the beach was accessible) did affect visitor experience ratings, but did not affect support for the closure. Those most inconvenienced, including beach users and fishermen, were most likely to feel the closure detracted from their experience, while wildlife observers felt it enhanced their visit. The beach closure did not have a significant affect on willingness to pay for protection. Willingness to pay is also related to support for current or increased wildlife protection efforts at the refuge, and to decreasing use levels at the refuge.

Literature Cited

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